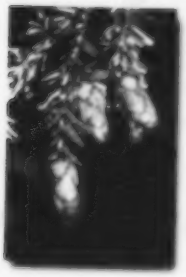

FGC Forest Genetics Council of British Columbia

ANNUAL REPORT 2005/2006

DOC
BC
F67
B
2005/06
c.3

Canadian Cataloguing in Publication Data

Forest Genetics Council of British Columbia
Annual report. -- 2000/2001

Annual.
Title from cover
Issuing body varies.
ISSN 1499-125X = Annual report - Forest Genetics Council of British Columbia

1. Forest Genetics Council of British Columbia - Periodicals.
2. Trees -
SD399.5.B74 634.9'8'09711'05 C2001-960195-6

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Acknowledgements

This Annual Report presents the 2005/06 financial information and performance indicators for activities planned and delivered through the Business Plan of the Forest Genetics Council of BC, and for the Forest Investment Account Tree Improvement Program. For more program detail, readers are directed to the FGC Business Plan for 2005/06, and the Tree Improvement Program Projects Report for 2005/06.

The enthusiasm, focus, and hard work of many people combine to make this provincial program a success, and I sincerely thank all involved. In particular, FGC Co-Chairs John Elmslie and Dale Draper are thanked for their guidance and support throughout the year.

Technical Advisory Committee Chairs provided important leadership to all subprograms, and are acknowledged for their efforts. They are Sally Aitken (Coastal TAC), Mike Carlson (Interior TAC), Dave Kolotelo (Gene Conservation TAC), Chris Hawkins (Extension TAC), Robb Bennett (Orchard Pest Management TAC), and Leslie McAuley (Gene Resource Information Management Advisory Committee). Annette van Niejenhuis is also thanked for her work in support of the Coastal TAC.

All members of the Forest Genetics Council and Technical Advisory Committees are thanked for their careful deliberations, contributions, and support. They are listed on the back page of this Annual Report.

My appreciation also goes to Roger Painter (FIA Tree Improvement Program Administrator) for another year of effort and cooperation.

Finally, the support of Provincial Chief Forester, Jim Snetsinger, and Deputy Chief Forester, Henry Benskin, are instrumental in keeping this program on track. My thanks for their important contributions.

JACK WOODS
PROGRAM MANAGER
FOREST GENETICS COUNCIL
OF BRITISH COLUMBIA

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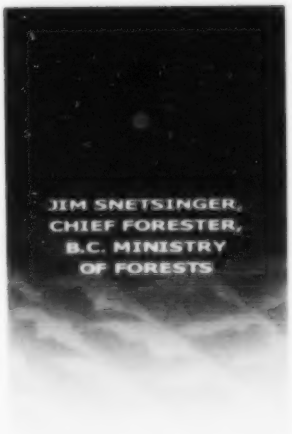
Message from the Chief Forester



JIM SNETSINGER, CHIEF FORESTER, B.C. MINISTRY OF FORESTS

First and foremost, I would like to thank the many participants from industry, universities, the consulting community, and, of course, the Ministry of Forests and Range for the participation, commitment, and cooperation that makes the provincial gene resource management program such an ongoing success.

Mountain pine beetle (MPB) issues continue to dominate forest management in BC, and increased salvage-harvest of beetle-killed timber has resulted in a lift of provincial sowing from approximately 220 million in 2002 to 278 million in the 2006 sowing year. This large increase in planting has placed further demands on seed inventories held by industry and government, and placed more pressure on interior orchards to produce the needed quantities of select seed. Mid-term timber supply decline is a key issue in many management units in BC, and the use of high genetic-worth seed will increase future options. The demand for high genetic worth lodgepole pine seed is particularly acute.

During the period of this report, I initiated the Future Forest Ecosystem Initiative (FFEI) to examine all aspects of forest management, with the objective of increasing planted forest resilience. Forest genetics and tree improvement activities are part of FFEI, and I fully anticipate that genetic considerations will feature prominently in future forest management activities. In particular, climate-change issues will, in part, likely be addressed through modifications to seed zones to ensure appropriate genotypes are deployed in future changed climatic zones. Maintenance of genetic diversity and a well-planned gene conservation program are also important components.

The use of faster growing select seed developed through the provincial tree improvement program is the primary silvicultural investment at the stand level. Provincially, the use of select seed will enhance the value of the public resource. It is important that forest stakeholders continue to cooperate through the FGC-led program, to ensure that public investments are directed to species and zones that will return the highest value. Choices among alternate investments are difficult to make, but through dialogue and cooperation, I am confident the Provincial Tree Improvement program will continue to provide high quality business planning, and technically sound investments.

During the coming year, I look forward to working with Council and those on affiliated committees, and to seeing further progress towards meeting long-term objectives.

Message from Forest Genetics Council Co-Chairs

Mountain pine beetle (MPB)issues remain at the forefront of forest management concerns on a large percentage of BC's provincial forests. Response to MPB is also a dominant issue for gene resource management, with concerns ranging from conservation to meeting seed supplies. As reported in section four of this report, overall provincial sowing increased to 278 million in the sowing year ending July, 2006; an increase of about 25% over sowing in the early part of the decade. The increase is concentrated in lodgepole pine dominated stands in the central and southern interior, and is challenging young pine and Douglas-fir seed orchards to ramp up production to meet seed needs. Of key importance is the use of select seed to help mitigate near-term timber supply shortfalls in the post-beetle era.

It is also noteworthy that the large sowing and planting increase has caused a temporary fall-down in one of the key performance indicators of the FGC. Section 4 of this report shows a reduction in the overall percentage of select seed sown from 50% in the 2005 sowing year to 46% in 2006. We are confident, however, that this indicator will come back on track through a combination of increasing orchard production and the return of provincial planting to average levels.

Forest management in British Columbia is changing, as are public expectations. In response to change, the provincial Chief Forester initiated the Future Forest Ecosystem Initiative (FFEI to seek input on forest management, climate change response, and ways to increase the resiliency of provincial forests. Gene resource management, including seed transfer, facilitated migration in response to climate change, gene conservation, and increasing forest productivity through select-seed use, are all a component of FFEI. In the coming years, these issues will dominate FGC and technical committee discussions. We are confident that the talent and experience of people associated with the FGC, in combination with our successful business planning process, will provide high quality support for FFEI.

Another force of change is the need of industry to remain competitive in global wood commodity markets. This reality is challenging forest companies province-wide. Increasing wood production from the current land-base, and improving wood quality will assist in this need to remain competitive. These opportunities will continue to be a focus of FGC-led programs.

Finally, we would like to recognize and sincerely thank the many industry and government staff who contributed to the provincial gene resource management program over the past year. We would also like to recognize the important financial support received from the Forest Investment Account Tree Improvement Program. This funding is instrumental to the success forest gene resource management work province-wide.

1.0 Forest Gene Resource Management in British Columbia

Forest gene resource management (GRM) encompasses the conservation, controlled use, and enhancement of genetic resources of forest tree species, as well as related communication and extension activities. In British Columbia, GRM is a cooperative effort.

The Forest Genetics Council of British Columbia (FGC) coordinates a provincial GRM program that is implemented by stakeholders in the forest industry, Ministry of Forests and Range (MOFR), Canadian Forest Service (CFS), and universities.

During the term of this report, the provincial Forest Investment Account Tree Improvement Program (FIA) was a major funding source for forest gene resource management in British Columbia. Industry, MOFR, and university cooperators also contributed substantial resources.

This Annual Report describes progress on work outlined in the FGC Business Plan for 2005/06. The Business Plan and this Annual Report focus on FIA funding, although performance indicators used at both the project and provincial levels represent the combined effort of all cooperators and resources.

> "Forest gene resource management includes the conservation, controlled use, and enhancement of genetic resources of forest tree species."

1.1 Forest Genetics Council of British Columbia

The FGC is a multi-stakeholder group representing the forest industry, MOFR, Canadian Forest Service, and universities. Council's mandate is to champion forest gene resource management, to oversee strategic and business planning for a cooperative provincial forest gene resource management program, and to advise the province's Chief Forester on policies related to forest gene resource management.

The Council provides a forum for stakeholder representatives to set goals and objectives, and to oversee the development and delivery of business plans to fulfill them.[1]

> "The Forest Genetics Council represents the B.C. forest industry, Ministry of Forests and Range, Canadian Forest Service, and universities."

[1] For more information on the Forest Genetics Council, see *http://www.fgcouncil.ca*

As set out in the 2004 Strategic Plan, Council's goal is to:

Lead the cooperative management of tree gene resources in British Columbia consistent with scientific and conservation principles, by:

- *Increasing the average volume gain of select seed used for Crown land reforestation to 20% by the year 2020,*
- *Increasing select seed use to 75% of the provincial total sown by 2013,*
- *Supporting gene conservation research and the cataloguing of indigenous-tree genetic resources,*
- *Coordinating stakeholder activities and securing resources to meet Business Plan priorities, and*
- *Monitoring progress in all aspects of gene resource management.*

Business Planning

"TAC's and Species Committees provide the forum for stakeholder focus on technical and forest management needs."

The annual FGC Business Plan outlines the activities and budgets of the seven subprograms that constitute the provincial forest gene resource management program.

FGC Technical Advisory Committees (TACs) provide technical and policy information to Council and contribute to the development of annual plans and associated budgets to achieve FGC goals and objectives (Figure 1). TAC's and Species Committees provide the forum for stakeholder focus on technical, forest management, and budget needs. Council reviews all strategies, plans, or recommendations from the TACs.

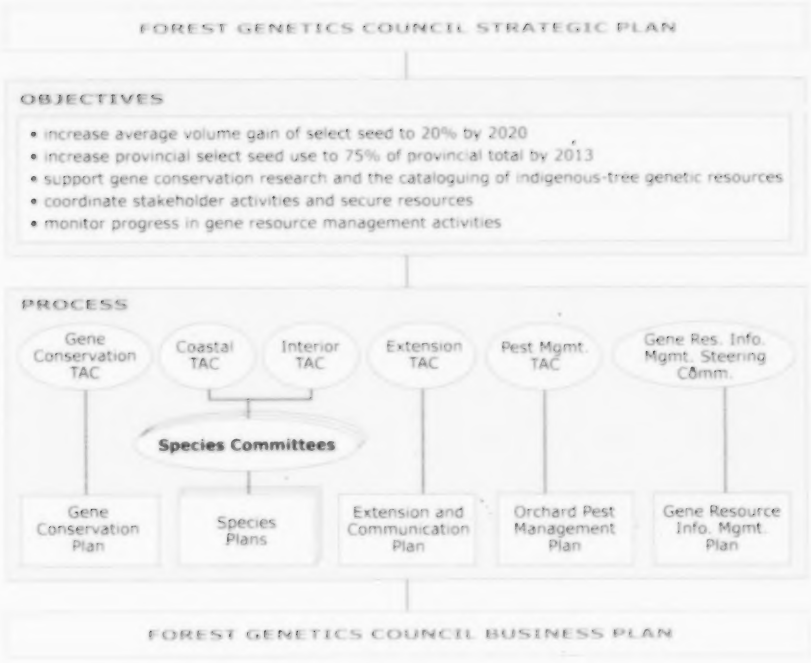

FOREST GENETICS COUNCIL STRATEGIC PLAN
OBJECTIVES
• increase average volume gain of select seed to 20% by 2020
• increase provincial select seed use to 75% of provincial total by 2013
• support gene conservation research and the cataloguing of indigenous-tree genetic resources
• coordinate stakeholder activities and secure resources
• monitor progress in gene resource management activities
PROCESS
Gene Conservation TAC
Coastal TAC
Interior TAC
Extension TAC
Pest Mgmt. TAC
Gene Res. Info. Mgmt. Steering Comm.
Species Committees
Gene Conservation Plan
Species Plans
Extension and Communication Plan
Orchard Pest Management Plan
Gene Resource Info. Mgmt. Plan
FOREST GENETICS COUNCIL BUSINESS PLAN

Figure 1
The link between FGC objectives, planning processes, and the FGC Business Plan.

1.2 Forest Investment Account Tree Improvement Program

The Tree Improvement Program (TIP) is part of the provincially delivered Forest Investment Account. FIA promotes sustainable forest management in British Columbia, and includes three major objectives:

- foster sustainable forest management
- improve the public forest asset base
- promote greater returns from the utilization of public timber.

TIP investments are organized and managed by the FGC and its committees. Council business planning coordinates and leverages TIP investments with other cooperator investments.

> *FIA Tree Improvement Program funding allocations are planned and delivered though the FGC business planning process.*

Activities in the FGC Business Plan are organized into the seven subprograms listed in (Figure 2):

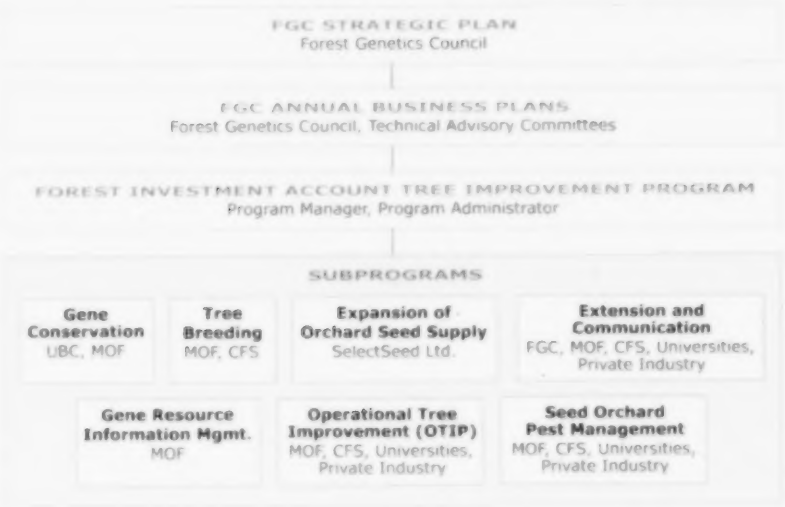


Figure 2
Relationship between FGC strategic and annual business plans, Forest Investment Account TIP, and participants in gene resource management activities.

FIA Funding and administration

TIP annual budget allocations are based on recommendations from the FGC, and are subject to the budget and approval processes of the Forest Investment Council and the Ministry of Forests and Range. Final programs and budgets are set out in annual FGC Business Plans.

During the 2005/06 fiscal year, the FIA-funded forest gene resource management activities were delivered through three administrative mechanisms:

- Ministry of Forests and Range/UBC Contribution Agreements
- Direct Ministry of Forests and Range Tree Improvement Branch Administration
- Ministry of Forests and Range/SelectSeed Company Ltd. Multi-Year Agreement.

The subprograms associated with each of the agreements are shown in Figure 3.

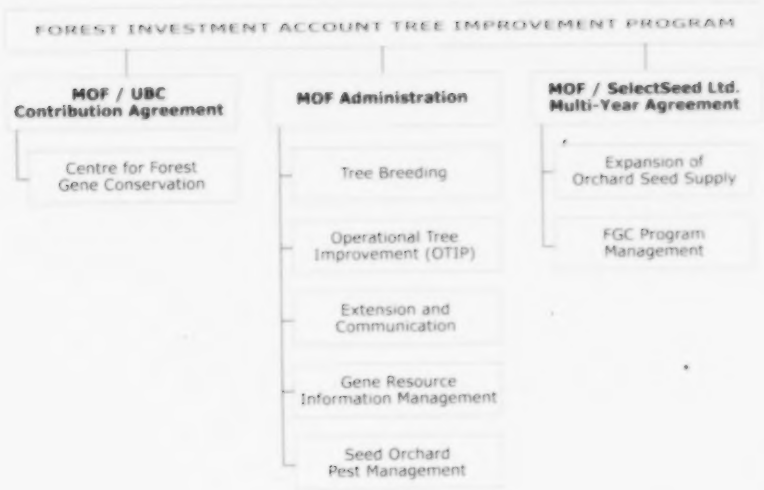

FOREST INVESTMENT ACCOUNT TREE IMPROVEMENT PROGRAM
MOF / UBC Contribution Agreement
Centre for Forest Gene Conservation
MOF Administration
Tree Breeding
Operational Tree Improvement (OTIP)
Extension and Communication
Gene Resource Information Management
Seed Orchard Pest Management
MOF / SelectSeed Ltd. Multi-Year Agreement
Expansion of Orchard Seed Supply
FGC Program Management

Figure 3
Funding agreements for the delivery of the FIA – TIP.

Monitoring and Reporting

Activities are monitored for performance relative to specified criteria, and for progress towards long-term program objectives. Performance is planned, monitored, and reported using performance indicators (PIs). The types of work are organized under the work breakdown structure (WBS) shown in Figure 4. PIs are not feasible for all types of work, and reports are written for technical support, gene conservation, extension, communication, and administrative activities.

> "Performance Indicators are used to plan and measure activities in support of long-term program objectives."

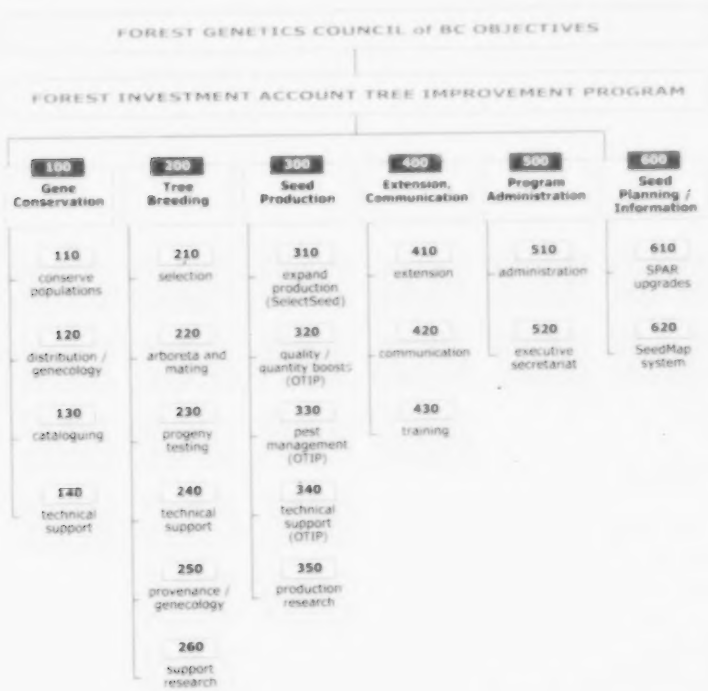


Figure 4
Work breakdown structure for program organization, management, and monitoring.

2.0 Forest Genetics Council and Committee Activity 2005/06

During the period of this report, the Forest Genetics Council met quarterly. In addition to subprogram progress reported below, the primary issues and activities included:

- developing a Business Plan and a Forest Investment Account Tree Improvement Program budget recommendation for the 2006/07 fiscal year, including planning and project development for Incremental FIA support;
- developed and facilitated implementation of a plan for increased seed and cone pest management support;
- providing direction to, and receiving reports from committees;
- managing committee mandate, structure, and activities in support of objectives.

2.1 Coastal and Interior Technical Advisory Committees (CTAC and ITAC

The ITAC and affiliated interior Species Committees met in Vernon and Prince George in November 2005. The CTAC and affiliated Species Committees met in November and December, 2005. Principal activities for both committees included:

- reviewing species plan strategies and Species Committee reports;
- reviewing breeding program activities, progress, and plans;
- coordinating breeding and orchard strategies;
- providing input to the FGC
- developing the OTIP project eligibility list.

2.2 SelectSeed Company Ltd. Board of Directors

The SelectSeed Board met in June and October 2005, and March 2006. Principal activities included:

- business planning for orchard development activities, and approval of a Business Plan for the 2006/07 fiscal year;
- receiving and approving audited financial statements for the 2004/05 fiscal year;
- addressing business items related to annual reporting requirements of the *Company Act;*
- reviewing progress in SelectSeed orchard developments, and receiving reports on activities undertaken; and
- coordinating and updating the principal contracts guiding orchard development and management activities.

2.3 Other Committees

- The **Extension TAC** met in May and November, 2005. Activities included review of projects and business planning for 2006/07.
- The **Gene Conservation TAC** met in February, 2006. Activities included review of projects and the development of projects and budgets for 2006/07.
- The **Gene Resource Information Management Steering Committee** met in February 2006. Activities included updates on all projects by project leaders, and development of a business plan framework for 2006/07.

3.0 FIA Tree Improvement Program 2005/06

3.1 Budgets and Expenditures

Forest Investment Account Tree Improvement Program allocations and expenditures for the 2005/06 fiscal year are shown in Table 1. The table does not include the in-kind, staff, and other substantial inputs by industry, MOFR, and university cooperators who contribute to the success of gene resource management activities in B.C.

Table 1
Summary of Forest Investment Account TIP Subprogram budgets and expenditures for the period April 1, 2005 through March 31, 2006 ($ x 1000).

Subprogram	Budget ($)	Expenditures ($)
Gene Conservation	220	220
Tree Breeding	2,200	2,223*
Operational Tree Improvement Program (OTIP)	600	543
Extension and Communication	120	120
Gene Resource Information Management	50	45
Seed Orchard Pest Management	250	162
Administration	40	40
Subtotal	**3,480**	**3,353**
Expansion of Orchard Seed Supply (SelectSeed Ltd.)	890	890**
Forest Investment Account Tree Improvement Program Contribution	**4,370**	**4,243**

* Additional expenditure approved by FGC
** SelectSeed FIA allocation listed. Total SelectSeed expenditure $906,418; difference supported through seed sale revenue and investment income.

3.2 Gene Conservation Subprogram

> "Gene conservation is fundamental to sustainable forest management."

Conservation of British Columbia's indigenous-tree genetic resource is fundamental to sustainable forest management. Council's gene conservation objectives are met primarily through the Centre for Forest Gene Conservation (CFGC) in the Faculty of Forestry at UBC.[2] Research activities of the CFGC fall into four main categories: (1) cataloguing the protection of genetic diversity for forest-tree species in British Columbia; (2) predicting the response of forest-tree populations to climate change; (3) developing an overall gene conservation strategy for BC; and (4) gaining knowledge about the genetics and the conservation needs of minor species. In addition, the

[2] Web site: http://www.genetics.forestry.ubc.ca/cfgc

CFGC investigates species-specific genetic issues associated with at-risk and rare tree species.

CFGC accomplishments in 2005/06 include:

- *In situ* conservation status of 50 forest-tree species by BEC zone was published. A detailed technical report combining *in situ*, *ex situ*, and *inter situ* conservation status and recommendations initiated.
- Publication of the ClimateBC model, and release of a web-based version. This model is receiving wide acceptance in BC as a climate-change forecast tool.
- Completed and published an analysis of lodgepole pine provenance trials to determine genetic responses to increased mean annual temperature. Complimentary growth-chamber research was also completed.
- Advanced an overall conservation strategy for BC's forest-tree genetic resources through completion of research on sampling strategies for capturing genetic diversity in *ex situ* collections, including the importance of peripheral, disjunct populations.
- Research on specific non-timber species of interest (whitebark pine, Garry oak, and Pacific dogwood) continues; seed transfer guidelines for whitebark pine were developed.
- Publication of eight journal articles and one encyclopedia article related to the gene conservation of BC tree species.

Project	Planned products	Products achieved
Theoretical framework	1 draft report	Report completed
Cataloguing and documenting *in situ* protection	Ground truthing *in situ* conservation status	Recommendations for ground-truthing completed
Sampling strategies and SPZs	2 scientific papers	2 scientific papers published
Markers and theory for measuring diversity	1 final report	1 final report completed
Whitebark pine diversity and conservation	1 final report on genecology, inbreeding, and *ex situ* seed storage	1 report completed and submitted for publication
Genetic structure of minor species	2 progress reports (Pacific dogwood and Garry oak)	2 progress reports completed
Climate change and gene conservation	2 progress reports: 2 scientific papers	2 progress reports completed
Extension	100 clients served; / Web site updated	~200 clients served; 1400 unique visitors to Web site

Table 2
Summary of Gene Conservation projects, planned products and products achieved for the period April 1, 2005 through March 31, 2006.

3.3 Tree Breeding Subprogram

> *Tree breeding programs quantify genetic diversity to develop seed transfer limits, and to select parent trees for seed orchards.*

The Tree Breeding Subprogram seeks to understand and use the genetic variation of commercially and ecologically important tree species in B.C. This work includes genecology[3] research to develop seed transfer limits, and the continual improvement of the genetic worth (GW)[4] of seed and vegetative materials transferred to seed orchards. Tree breeding activities include selecting parents in wild stands, propagating, testing offspring, controlled breeding, establishing/maintaining/measuring trials, and associated research. The MOFR Research Branch manages and carries out Tree Breeding Subprogram activities. FGC Interior and Coastal TACs, and their associated Species Committees, assist MOFR tree breeders with planning for the Tree Breeding Subprogram.

Figure 5 shows the allocation of effort to Tree Breeding Subprogram activities in 2005/06. Figure 6 compares the work completed under each activity to work planned for the fiscal year.

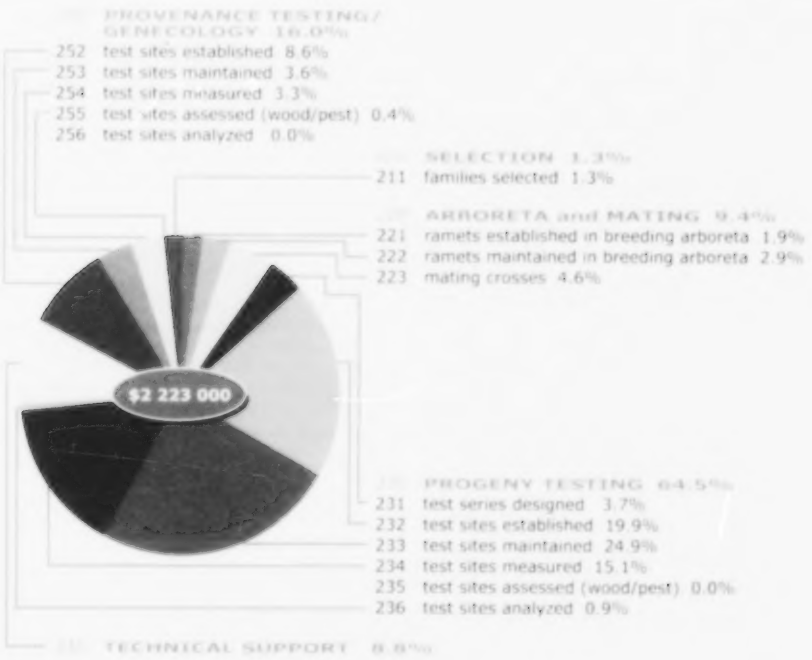

PROVENANCE TESTING/ GENECOLOGY 16.0%
252 test sites established 8.6%
253 test sites maintained 3.6%
254 test sites measured 3.3%
255 test sites assessed (wood/pest) 0.4%
256 test sites analyzed 0.0%
SELECTION 1.3%
211 families selected 1.3%
ARBORETA and MATING 9.4%
221 ramets established in breeding arboreta 1.9%
222 ramets maintained in breeding arboreta 2.9%
223 mating crosses 4.6%
$2 223 000
PROGENY TESTING 64.5%
231 test series designed 3.7%
232 test sites established 19.9%
233 test sites maintained 24.9%
234 test sites measured 15.1%
235 test sites assessed (wood/pest) 0.0%
236 test sites analyzed 0.9%
TECHNICAL SUPPORT 8.8%

Figure 5
Tree Breeding Subprogram allocation of effort, 2005/06.

[3] Genecology is the study of relationships between genetic diversity and environments.

[4] Genetic worth is a measure, as a percentage, of the genetic quality of a seed or vegetative lots over wild stand material, measured for a specific trait (e.g., growth, wood density, pest resistance).

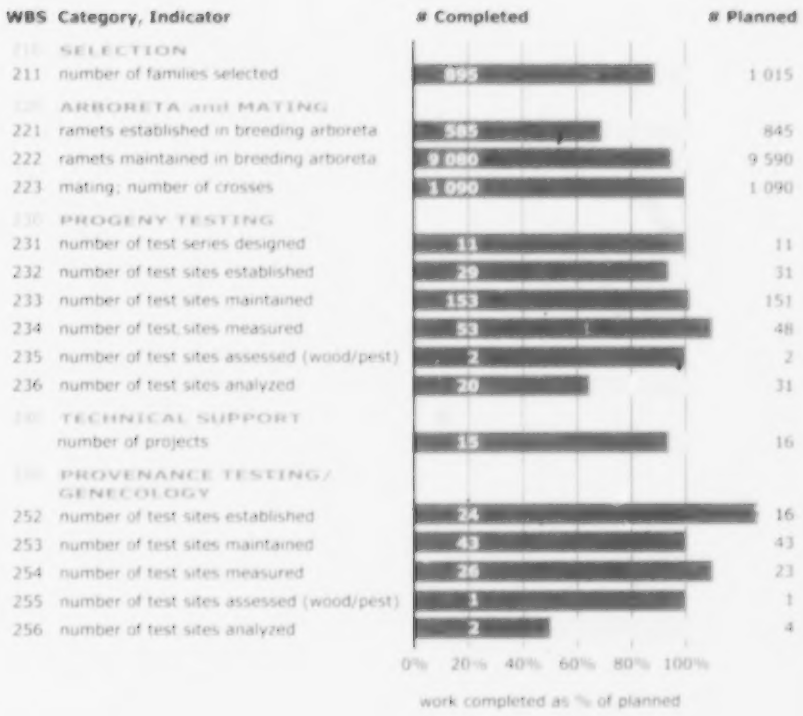


Figure 6
Tree Breeding Subprogram progress, 2005/06.

Progress in Operational Breeding

A substantial number of second-generation matings were carried out in interior spruce, interior Douglas-fir, western redcedar, and western larch, reflecting the continued shift of focus in many seed planning units to second generation (F1 and F2 – full-sib)[5] testing. During the year, maintenance was carried out on 153 sites, and 79 progeny and genecology tests were measured or assessed for a variety of traits, providing the data required for calculating parent-tree breeding values. Analysis of progeny-test data to provide breeding values and new selections for seed orchards is ongoing.

> "Trees of high genetic quality are selected for seed production in seed orchards."

Interior Breeding Program Highlights

- Spruce seedlings from 254 full-sib families were grown for second-generation progeny tests in the Prince George seed planning unit.
- 10-year-old western larch progeny tests in the Nelson zone were measured, and 4 realized-gain trials were established to estimate volume/ha yields across a range of GW, stand density, and stand spacing.
- Second-generation lodgepole pine selections for seed orchard populations were made in the Nelson seed planning unit.

[5] F1 – full-sib populations are the first generation of pedigree families where both parents of all offspring are known and selected for specific desirable traits. Most provincial programs started with open-pollinated testing in the first generation.

Coastal Breeding Program Highlights

> *Third-generation selections were made for coastal Douglas-fir.*

- Second-generation progeny tests of Douglas-fir were measured and 72 third-generation selections were made for further breeding and seed orchard populations. A third phase of second-generation tests were established.
- Phase 2 of the F_1 sitka spruce weevil-resistance breeding program was sown.
- Redcedar parents from the first four series of progeny tests were selected for breeding and seed orchard populations.
- Yellow cedar clonal values for approximately 5,000 clones were estimated using 9-year test data. Top clones are propagated for operational release.

Provenance Testing and Genecology

> *A study to estimate interior spruce climate-based response was established with 128 seed sources on 18 test sites.*

Provenance testing and genecology work guide seed transfer, and provide an information base for decisions related to the deployment of genotypes in the provincial reforestation program. Increasingly, genecology data are linked to climate-change modeling and response. Highlights include:

- 128 seedlots representing breeding programs, as well as wild seed from a broad geographic range (Yukon to Arizona) were planted on 18 sites. This project is will estimate climate-based response functions.
- Provenance data from coastal Douglas-fir tests established as early as 1959 were comprehensively analyzed to better understand elevation transfer and seed movement under various climate-change scenarios.

3.4 Operational Tree Improvement (OTIP) Subprogram

> *OTIP focuses on increasing the quality and quantity of seed produced from existing seed orchards.*

The OTIP Subprogram focuses on increasing the quality and quantity of seed produced from provincial seed orchards. It also provides technical support to improve orchard production and management.

OTIP projects are developed through a call-for-proposals that is based on Species Plan priorities. FGC Review Committees rank all proposals against FGC objectives and SPU priorities, based on technical merit, impact, value, and cost. The MOFR Tree Improvement Branch administers the OTIP Subprogram on behalf of the Forest Investment Account and the FGC.

Figure 7 shows the allocation of funding to OTIP Subprogram activities in 2005/06. Figure 8 compares the work completed under each activity to work planned for the fiscal year.

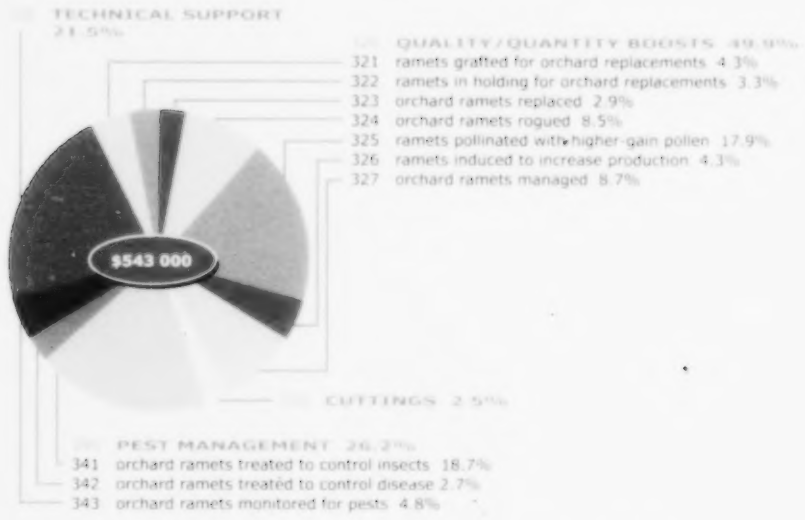

TECHNICAL SUPPORT
21.5%
QUALITY/QUANTITY BOOSTS 49.8%
321 ramets grafted for orchard replacements 4.3%
322 ramets in holding for orchard replacements 3.3%
323 orchard ramets replaced 2.9%
324 orchard ramets rogued 8.5%
325 ramets pollinated with higher-gain pollen 17.9%
326 ramets induced to increase production 4.3%
327 orchard ramets managed 8.7%
$543 000
CUTTINGS 2.5%
PEST MANAGEMENT 26.2%
341 orchard ramets treated to control insects 18.7%
342 orchard ramets treated to control disease 2.7%
343 orchard ramets monitored for pests 4.8%

Figure 7
OTIP Subprogram allocation of effort, 2005/06.

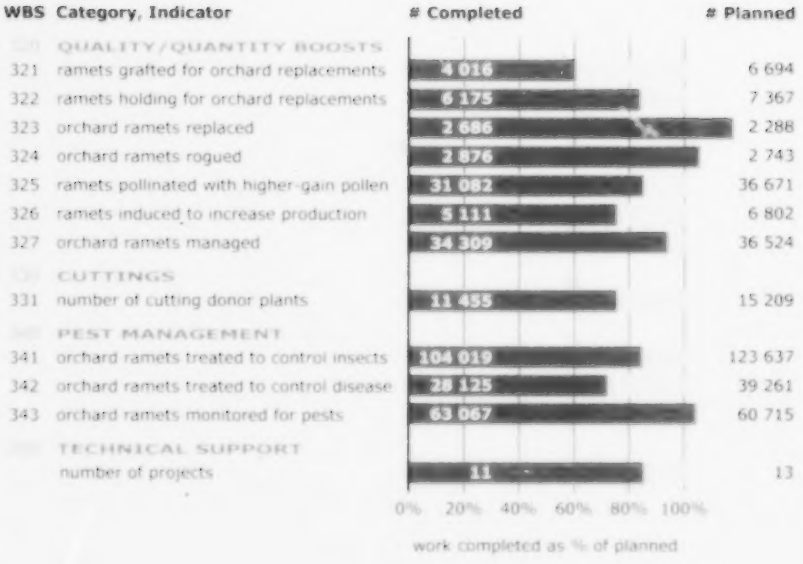

WBS Category, Indicator
Completed
Planned
QUALITY/QUANTITY BOOSTS
321 ramets grafted for orchard replacements 4 016 6 694
322 ramets holding for orchard replacements 6 175 7 367
323 orchard ramets replaced 2 686 2 288
324 orchard ramets rogued 2 876 2 743
325 ramets pollinated with higher-gain pollen 31 082 36 671
326 ramets induced to increase production 5 111 6 802
327 orchard ramets managed 34 309 36 524
CUTTINGS
331 number of cutting donor plants 11 455 15 209
PEST MANAGEMENT
341 orchard ramets treated to control insects 104 019 123 637
342 orchard ramets treated to control disease 28 125 39 261
343 orchard ramets monitored for pests 63 067 60 715
TECHNICAL SUPPORT
number of projects 11 13
0% 20% 40% 60% 80% 100%
work completed as % of planned

Figure 8
OTIP Subprogram progress, 2005/06.

Activities

OTIP projects generally met expectations[6]. Propagation (WBS 321) was lower than planned primarily due to shortage of compatible rootstock for coastal Douglas-fir. Supplemental pollination (WBS 325) and pest management activities (WBS 340) were less than planned due to cone crops being below expectations. Other projects proceeded much as planned, with orchard roguing and ramet replacement exceeding planned numbers.

[6] For additional detail on projects, see the *Tree Improvement Program Project Report for 2005/06*.

A total of 11 technical support projects were completed, out of 13 initially planned. Projects included lodgepole pine seed set and seed production enhancement methods, investigations of seed orchard location on progeny performance, interior spruce crown management trials, protocols and collection of base-line lodgepole pine production data, regional contaminant-pollen monitoring, estimates of contaminant pollen levels in redcedar orchards, and yellow cedar rooting strategies.

3.5 Expansion of Orchard Seed Supply Subprogram (SelectSeed Company Ltd.)

"SelectSeed is wholly owned by the BC Forest Genetics Society."

SelectSeed Company Ltd. is wholly owned by the B.C. Forest Genetics Society and reports to the FGC. SelectSeed's mandate is to develop and manage orchard expansions needed to meet FGC objectives, and to produce seed of high genetic quality for use in provincial reforestation programs. SelectSeed also provides program management services to the FGC.

SelectSeed's Business Plan and investments are a component of the long-term FGC business planning process. Management discretion lies with the SelectSeed Board of Directors, and is guided by the terms of the multi-year agreement between SelectSeed and the Province of British Columbia. The SelectSeed Business Plan is reviewed and approved annually by the FGC. Selectseed has entered into contracts with private orchard companies to develop and manage needed seed orchards.

SelectSeed Mission Statement

SelectSeed supports Forest Genetics Council objectives for the development of seed orchard facilities to meet the provincial demand for high quality, ecologically adapted tree seed through investments, cooperative work with FGC members, and effective program management.

Figure 9 shows funding allocations to Subprogram activities in 2005/06. Figure 10 compares the work completed under each activity to work planned for the fiscal year.

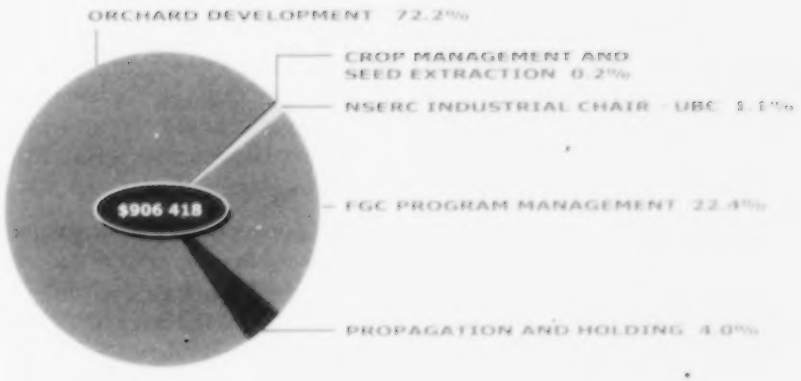

ORCHARD DEVELOPMENT 72.2%
CROP MANAGEMENT AND SEED EXTRACTION 0.2%
NSERC INDUSTRIAL CHAIR - UBC 5.1%
$906 418
FGC PROGRAM MANAGEMENT 22.4%
PROPAGATION AND HOLDING 4.0%

Figure 9
Expansion of Orchard Seed Supply Subprogram allocation of effort, 2005/06.

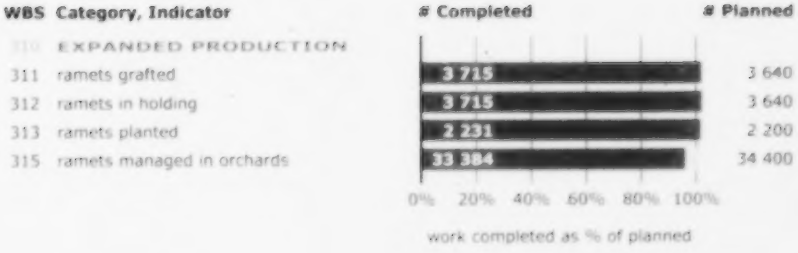


Figure 10
Expansion of Orchard Seed Supply Subprogram progress, 2005/06.

Orchard Development and Production

In its sixth year of operation, SelectSeed focused on managing 14 orchard contracts and on propagation to complete orchard development. No new orchards were initiated during the year. About 2,200 ramets were planted, bringing the total number of ramets established across the 14 orchard developments to about 34,400 of 35,320 planned (97%). Crops were harvested from orchard 321 - Douglas-fir NE low, and orchard 337 (5 hl / 2.2 kg) - lodgepole pine NE low (1.0 hl /0 .3 kg).

> *SelectSeed orchards are 97% established, with 34,400 ramets in 14 orchards.*

Losses to graft incompatibility in lodgepole pine orchards continues to erode establishment, but this issue is diminishing as the orchards age.

SelectSeed Ltd. Management

SelectSeed activities in 2005/06 included:

- managing orchard and propagation contracts, including planning, support for orchard contractors, stock allocations, workplan development, and records maintenance;
- preparing a Business Plan and an Annual Report covering business procedures, budgets, long- and short-term activities, and accomplishments;

- maintaining books of account and corporate records; managing audits and Board of Director procedures; and
- reporting to FIA administrators on accounts and activities.

FGC Program Management

FGC program management activities included developing the FGC Annual Report for 2004/05; organizing committee work for development of the 2006/07 FGC Business Plan; policy, committee, issue management, and reporting for the FGC; updating species plans; and coordinating FGC activities. During the reporting period, substantial contributions were made to the Chief Forester's Standards for Seed Use, including development of a publication on estimating parental contributions to seed orchard crops.[7]

3.6 Extension and Communication Subprogram

The Extension and Communication Subprogram supports FGC goals and objectives through extension, communication, and education activities. These activities are developed and guided by the FGC Extension Technical Advisory Committee (ETAC), which includes representatives from government, industry, seed dealers, academia, and consultants.

Figure 11 shows funding allocations to the Extension and Communication Subprogram activities in 2005/06.

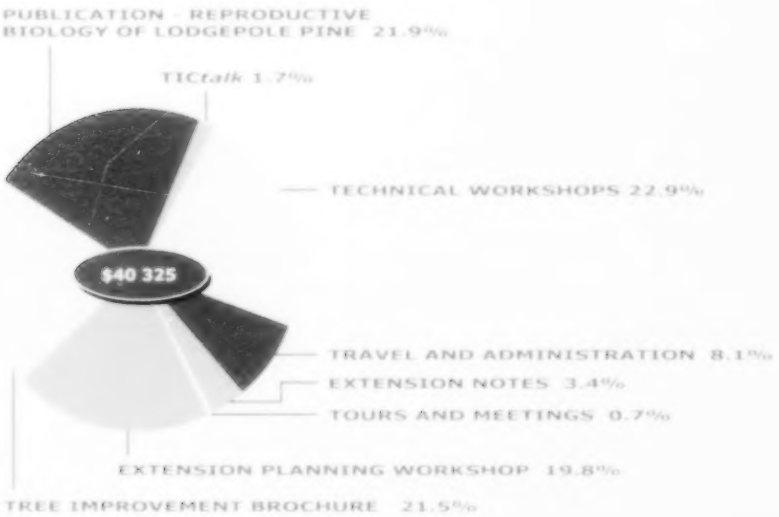


Figure 11
Extension and Communication Subprogram allocation of effort, 2005/06.

[7] Woods, J. H. 2005. Methods for estimating gamete contributions to orchard seed crops and vegetative lots in British Columbia. BC. For. and Range For. Sci. Prog. Tech. Rep. 25. 17pp.

FGC Program Extension

In November of 2005, the Extension Technical Advisory Committee (ETAC) developed a 5-year extension plan. This will form the basis for planning and budgeting over the coming period. During the period of this report, two publications were completed (Extension notes 3 and 7[8]), and a third publication was developed and is ready for publication in 2006.

ETAC delivered three workshops;

- Extension planning to develop the basis for a long-term extension strategy (held in Vernon in June 2006)
- Crown Management in interior orchards (held in Vernon in November, 2005), and
- Pollen management (held in Saanich in February 2006).

In addition, a tree improvement tour was organized in conjunction with the Northern Interior Silviculture Committee annual meeting in Prince George. ETAC also contributed to the FGC program through a variety of contributions and reviews of member activities and stakeholder meetings.

> "The Extension and Communication Subprogram activities serve public, technical, and decision-making audiences."

3.7 Gene Resource Information Management Subprogram

The Gene Resource Information Management Subprogram supports the development of registries and other tools to aid a broad range of gene resource management (GRM) activities. These include, registering, cataloguing, and ordering seed and seedlings, improved client access to information, incorporation of genetic gain into timber supply analyses, assisting with seed deployment and gene conservation strategies, and monitoring activities and progress.

A Steering Committee develops Gene Resource Information Management activities and budgets. The Committee – comprised of MOFR tree improvement, research, and systems staff; industry representatives; and the FGC Program Manager – identifies projects and sets priorities for FGC approval. The Tree Improvement Branch administers the subprogram on behalf of the MOFR's Forest Investment Account (FIA).

Figure 12 shows funding allocations to the Gene Resource Information Management Subprogram activities in the 2005/06 fiscal year.

> "The Gene Resource Information Management Subprogram develops tree genic resource registries and information management tools to assist seed users."

[8] Ext. Note 3: *Benefits of Using Selected Reforestation Materials*; Ext. Note 7: *The Reproductive Biology of Lodgepole Pine* by J. Owens

Figure 12
Gene Resource Information Management Subprogram allocation of effort, 2005/06.

LAND BASE SEED PLANS 55.6%
SPAR / SEEDMAP DEVELOPMENT 11.1%
PROVINCIAL SEED ZONE BUSINESS CASE ANALYSIS 22.2%
TRAINING AND EXTENSION 11.1%
$45 000

Accomplishments

- Initiation of a multi-year project to develop methods and data sets for land-based seed plans. This work includes GIS-based overlays of seed planning information with other forest-level information such as harvest, silviculture, and ecosystem data sets.
- Updated spatial data to reflect new parent-tree areas-of-use.
- Development of webpages to support the collection of cones from lodgepole pine superior provenance areas. This initiative will assist users in their efforts to meet seed requirements with increased harvest and planting caused by MPB.
- Continued development of the SPAR[9] Parent Tree Registry and on-line seed registration.
- Development of SPAR on-line help screens and SPAR/SeedMap training materials to assist clients.

3.8 Seed Orchard Pest Management Subprogram

> *"The seed and cone pest management subprogram coordinates research, extension of information, and operational controls"*

The Seed Orchard Pest Management Subprogram supports research, extension activities, and pest management operations to increase orchard yields of high quality seed. The Pest Management Technical Advisory Committee (PM-TAC) guides investments and activities.

The FGC recognizes the need for a three-level approach to pest management, including basic and applied research by dedicated research staff, applied support from highly qualified pest management specialists, and operational delivery by orchard operations. The plan put forward by the PMTAC in 2005, and subsequently approved by the FGC, began implementation during the period of this report. As a result, positions within the Ministry of Forests and Range were filled for a Pest Management

[9] SPAR – Seed Planning and Registration System

Research Scientist and an Interior Orchard Pest Management Biologist. With the filling of these positions, pest management activities will accelerate.

Contract research was also supported through a call for proposals. Research projects undertaken during 2005/06 fiscal year resulted in the following accomplishments.

Table 3
Seed and cone pest research projects

Project	Species primarily impacted	Progress
Conifer seed bug (*Leptoglossus occidentalis*): damage control methods	Pli, Fdi, Fdc, Pw	Population levels of Leptoglossus seed bug were insufficient to allow this project to proceed.
Fir coneworm (*Dicryctia abietivorella*): Identification of an effective sex pheromone lure and the demonstration of its efficacy in seed orchards (two projects	Fdi, Fdc, Sx	Pheromone lure optimized, and phenology data collected.
Tests of systemic insecticides for cone and seed insect control	All species	Pesticide trials implemented at coastal and interior sites. Seed processing, data collection, and analysis mostly completed.
Reducing seed borne Fusarium infections in orchard seed to lower seedling mortality; determining infection mechanisms	All species	Cone sampling and analysis, and studies of infested seedlots completed.

3.9 Administration

Administration of Forest Investment Account Tree Improvement Program funding is carried out by the MOFR Tree Improvement Branch, and includes financial, monitoring, and reporting services. The administrative infrastructure for the Tree Breeding, OTIP, Extension and Communication, and Gene Resource Information Management Subprograms is provided by the MOFR. Administration of the Gene Conservation and Orchard Expansion Subprograms is provided by the University of British Columbia and SelectSeed Co. Ltd., respectively.

4.0 Provincial Progress Indicators

Two of the principal objectives in the FGC Strategic Plan are to increase select seed use to 75% of total provincial sowing by 2013 and to increase the average volume gain (genetic worth for growth, or GWg) of select seed to 20% by 2020. Figures 13 and 14 show, respectively, actual and forecast values for select seed use and GWg for the period 1995–2025.

Figure 13 shows a significant reduction in the percentage of select seed use from the 2005 sowing year (50%) to the 2006 sowing year (46%), following a steady increase in select seed use from 2001 to 2005. The reduced percentage reflects increased sowing in response to Allowable Annual Cut and harvest increases driven by MPB. During 2000 and 2001, total provincial sowing averaged about 220 million per year. In 2006, sowing was up to 278 million; an increase of 19 million from the previous year. Increased provincial sowing contributed to the drop in this progress indicator. However, the combination of increasing orchard production and future declines in sowing as the harvest of MPB-killed timber recedes, is expected to bring this indicator back to expected levels over the next few years.

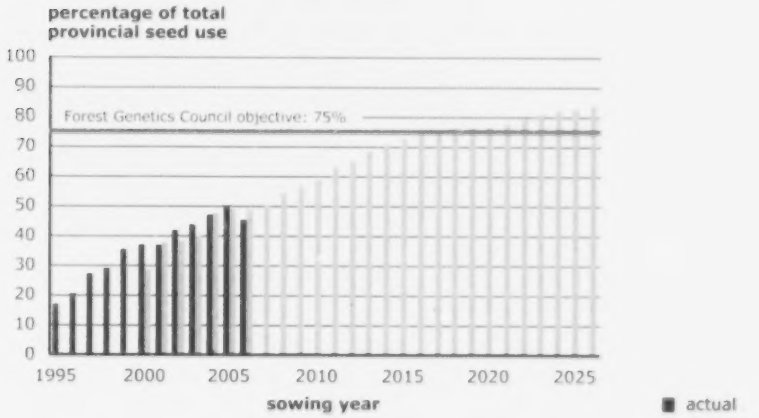


Figure 13
Actual and Species Plan forecasts of select seed production as percentage of provincial seed use.

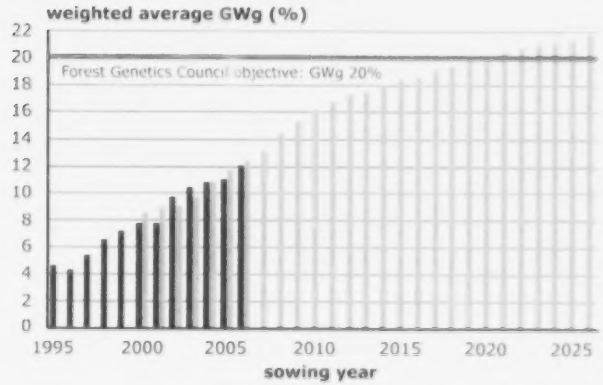


Figure 14
Actual and Species Plan forecasts of average genetic worth for growth (GWg) of select seed in B.C.

GWg of orchard seed used (figure 14) continues to rise, although it trails projections to some degree. High-gain interior Douglas-fir and lodgepole pine orchards established by SelectSeed Co. are beginning seed production, and average GWg will continue to rise in the coming years. These gains reflect the effort of breeders to provide recommendations and improved materials, and of seed orchard managers to upgrade orchards. The OTIP Subprogram is instrumental in supporting these ongoing orchard upgrades.

4.1 2005 Orchard Seed Crops

In 2005, all provincial orchards produced a combined crop of 500.6 kilograms of seed, sufficient to grow approximately 42.6 million seedlings (Table 3; Appendix 2). Crops from most orchards were down from 2004 due to a generally poor cone year. Interior Douglas-fir and lodgepole pine orchard production was again up substantially, however, as orchards continue to mature and crop management techniques improve.

> *Provincial seed orchards produced sufficient seed for 42.6 million seedlings.*

Table 4
Summary of 2005 seed crops from all provincial orchards.

Species	Seed produced (kg)	Seedling equivalents (million)
Interior spruce	91.4	10.3
Lodgepole pine	137.7	16.4
Western larch	57.0	4.3
Interior Douglas-fir	53.9	2.1
White pine	10.4	0.2
Western redcedar	16.2	3.4
Sitka spruce	1.0	0.1
Coastal Douglas-fir	124.3	4.2
Western hemlock	8.7	1.5
	500.6	42.6

5.0 People

Achievement award presented to Shane Browne-Clayton, RPF

The Forest Genetics Council of BC Achievement Award was presented to Shane Browne-Clayton by Provincial Chief Forester Jim Snetsinger at an honourary dinner held in Kelowna on April 6, 2006.

Share was recognized for many years of hard work on behalf of gene resource management (GRM) and tree improvement activities in BC. Accomplishments include participation on the Interim Tree Improvement Council from 1996 to 1998, Industry Co-Chair of the Forest Genetics Council from 1998 to 2005, participation on the Interior Technical Advisory Committee, and, preceding formation of the FGC, participation on the Interior Tree Improvement Council. Shane continues to serve on the SelectSeed Company Ltd. Board of Directors.

Appendix 1. Seed planning units

Seed planning unit (SPU)				Annual planting[10] (millions)	Program category[11]
#	Species	SPZ	Elev. band (m)		
1	Fdc	M	1-700	10.8	1
2	Cw	M	1-600	7.1	1
3	Hw	M	1-600	1.4	1
4	Sx	NE	1000-1500	4.4	1
5	Sx	NE	1500-1900	5.3	1
6	Ss	M	1-500	1.0	1
7	Pli	NE	700-1400	3.6	1
8	Pw	M/SM	1-1400	0.3	1
9	Ba	M	1-1000	1.1	3
10	Pli	TO	700-1400	15.0	1
11	Yc	M	1-1100	1.4	1
12	Pli	PG	700-1200	36.5	1
13	Lw	NE	700-1200	3.0	1
14	Sx	PG	600-1200	27.9	1
15	Pw	KQ	500-1400	0.9	1
16	Pli	TO	1400-1600	5.9	2
17	Pli	BV	700-1200	16.4	1
18	Pli	CP	700-1100	6.2	1
19	Fdc	SM	200-1000	1.3	2
20	Pli	NE	1400-2000	2.9	3
21	Fdi	NE	400-1000	2.4	1
22	Fdi	NE	1000-1600	3.4	2
23	Sx/Ss	SM/NST	all	0.6	3
24	Hw	M	600-1100	0.8	2
25	Sx	EK	750-1700	2.0	1
26	Pli	PG	1200-2000	4.1	3
27	Cw	SM	200-1000	0.6	3
28	Sx	TO	1300-1900	3.5	1
29	Pli	EK	1500-2000	2.2	3
30	Sx	TO	700-1300	1.4	2
31	Fdc	M	700-1200	1.4	2
32	Pli	EK	800-1500	2.8	2
33	Cw	M	600-1500	1.2	2
34	Lw	EK	800-1500	2.0	1
35	Sx	BV	500-1200	9.7	1
36	Bg	M	1-700	0.1	3
37	Fdi	QL	700-1200	0.5	2
39	Fdi	EK	700-1400	1.0	2
40	Sx	PR	650-1200	5.4	2
41	Fdi	PG	700-1000	2.6	2
42	Sx	PG	1200-1500	2.3	2
43	Fdi	CT	600-1200	0.9	2
44	Sx	NE	1-1000	1.1	2
45	Pli	BB/CHL	all	12.4	3
46	Bl	all int.	all	1.6	3
47	Bn	M	all	0.1	3
48	Aspen/birch/ poplar	Interior	-	NA	3
49	Alder/poplar/ maple	Coast	-	NA	3
50	Lw	NE	1200-1800	1.3	2

[10] Annual planting based on 5-year average sowing (2002-2006 sowing years)

[11] Program categories: 1.Advanced-generation program, 2. First-generation program, 3. genecology only, 4. no genetics program.

Appendix 2. Summary of 2005 seed orchard crop production

Species	SPU	Orch. #	Producer	GWg	Cones (hL)	Seed (g)	Estimated # seedl. (x1000)
CW	M 1-600m	152	Twest – Mt. Newton	G +06	7.25	5,308	962.1
CW	M 1-600m	184	MOFR - Saanich	G +07	1.25	1,618	387.0
CW	M 1-600m	186	CFP - Sechelt	G +08	5.10	5,067	1,068.1
CW	M 1-600m	189	MOFR - Saanich	G +05	5.20	4,224	997.0
FDC	M 700-1200m	116	CFP - Sechelt	G +04	43.56	5,193	148.2
FDC	M 1-700m	134	Twest – Mt. Newton	G +07	76.00	14,556	436.5
FDC	M 1-700m	134	Twest – Mt. Newton	G +11	64.00	16,419	583.5
FDC	M 1-700m	149	MOFR - Bowser	G +07	84.25	15,423	554.3
FDC	M 1-700m	154	Twest – Mt. Newton	G +07	105.30	27,323	965.2
FDC	M 1-700m	154	Twest – Mt. Newton	G +10	49.70	16,070	505.1
FDC	M 1-700m	162	MOFR - Bowser	G +11	75.00	13,670	505.4
FDC	M 1-700m	162	MOFR - Bowser	G +16	6.00	875	36.7
FDC	M 1-700m	166	WFP - Saanichton	G +10	22.83	3,462	113.2
FDC	SM 200-1000m	181	MOFR - Saanich	G +02	4.60	1,173	44.9
FDC	M 1-700m	183	Twest – Mt. Newton	G +13	23.70	8,207	298.1
FDC	M 1-700m	183	Twest – Mt. Newton	G +19	3.00	1,963	58.1
FDI	PG 700-1000m	225	VSOC	G +25	18.34	7,933	319.4
FDI	QL 600-1200m	226	VSOC	G +25	30.57	20,685	876.4
FDI	CT 600-1200m	231	VSOC	G +14	36.07	21,916	792.3
FDI	NE 400-1000m	321	PRT/SCL - Grandview	G +28	7.70	3,350	104.5
HW	M 600-1100m	130	Twest – Mt. Newton	G +06	3.50	1,209	179.4
HW	M 1-600m	133	CFP - Sechelt	G +16	8.60	3,111	556.5
HW	M 1-600m	170	WFP - Saanichton	G +14	2.24	1,708	324.8
HW	M 1-600m	182	Twest – Mt. Newton	G +14	3.50	1,569	288.1
HW	M 600-1100m	196	MOFR - Saanich	G +07	1.37	1,124	198.8
LW	NE 700-1200m	332	MOFR - Kalamalka	G +30	1.40	629	38.7
LW	NE 700-1200m	332	MOFR - Kalamalka	G +30	3.50	1,826	125.6
LW	NE 700-1200m	332	MOFR - Kalamalka	G +32	46.00	26,733	2,042.0
LW	EK 800-1500m	333	MOFR - Kalamalka	G +15	36.50	27,819	2,082.4
PLI	PG 700-1200m	201	MOFR - Prince George	G +02	32.70	16,076	1,873.0
PLI	BV 700-1200m	204	MOFR - Prince George	G +02	38.00	19,238	2,470.1
PLI	CP 700-1100m	218	VSOC	G +09	32.28	5,549	613.3
PLI	BV 700-1200m	219	VSOC	G +12	95.25	22,874	3,037.7
PLI	PG 700-1200m	220	MOFR - Prince George	G +07	34.40	15,159	1,909.8
PLI	PG 700-1200m	222	VSOC	G +10	25.25	5,248	616.4
PLI	CP 700-1100m	223	MOFR - Prince George	G +06	28.80	14,129	1,854.2
PLI	BV 700-1200m	228	MOFR - Prince George	G +07	33.20	14,843	2,007.6
PLI	NE 700-1400m	307	MOFR - Kalamalka	G +07	41.40	14,293	1,592.9
PLI	NE 700-1400m	307	MOFR - Kalamalka	G +07	5.10	1,060	129.4
PLI	TO 700-1400m	308	PRT - Grandview	G +06	23.37	7,342	818.2
PLI	TO 1400-1600m	310	Tolko - Eaglerock	G +10	12.25	3,755	463.1
PLI	TO 700-1400m	311	PRT - Grandview	G +16	34.01	9,105	786.3
PLI	NE 700-1400m	313	PRT - Grandview	G +16	23.85	7,854	683.9
PLI	NE 700-1400m	337	PRT/SCL - Grandview	G +15	1.28	413	48.1
PWC	M/SM 1-1400m	174	CFP - Sechelt	GWr	45.00	1,085	20.8
PWC	M/SM 1-1400m	175	MOFR - Saanich	GWr	9.40	3,849	86.8
PWC	M/SM 1-1400m	403	Twest – Mt. Newton	GWr	3.50	418	6.3
PWI	KQ 500-1400m	335	MOFR - Kalamalka	GWr	15.20	4,997	90.3
SS	M 1-500m	172	WFP - Saanichton	R +87	1.33	806	113.3
SS	M 1-500m	195	Yellowpoint Prop	R +85	1.00	196	33.8
SX	PG 1200-1500m	206	MOFR - Skimikin	G +02	30.20	24,317	3,031.4
SX	PG 600-1200m	211	VSOC	G +26	30.49	10,135	1,270.7
SX	BV 500-1200m	229	MOFR - Skimikin	G +14	59.00	56,954	5,954.1

Forest Genetics Council of BC

Name	Affiliation	Representing	Name	Affiliation	Representing
John Elmslie	Winton Global	Industry Co-Chair	Gary Hogan	Can. Forest Serv.	Can. Forest Serv.
Dr. Dale Draper	Ministry of Forests and Range	MOFR Co-Chair	Scott King	Louisiana Pacific	S. Int. industry
Dr. Sally Aitken	University of BC	Coast TAC	Diane Medves	Island Timberlands	Coast industry
Dr. John Barker	University of BC	Coast industry	Al McDonald	BC Timber Sales	MOFR and BCTS
Dr. Michael Carlson	Ministry of Forests and Range	Interior TAC	Mike Madill	Ministry of Forests and Range	Ministry of Forests and Range
Frank Gundersen	Abitibi Consolidated	N. int. industry	Dr. Alvin Yanchuk	Ministry of Forests and Range	Ministry of Forests and Range
Dr. Chris Hawkins	Univ. of Northern BC	University	Henry Benskin	Ministry of Forests and Range	FIA (non-voting)

Coastal Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Sally Aitken (Chair)	University of BC	David Reid	Ministry of Forests and Range
Patti Brown	Canadian Forest Products	Dr. John Russell	Ministry of Forests and Range
Charlie Cartwright	Ministry of Forests and Range	Dr. Michael Stoehr	Ministry of Forests and Range
Tim Crowder	TimberWest Forests	Annette van Niejenhuis	Western Forest Products
Diane Douglas	Ministry of Forests and Range	Dr. Chand-yi Xie	Ministry of Forests and Range
Dr. John King	Ministry of Forests and Range	Dr. Alvin Yanchuk	Ministry of Forests and Range
Dave Kolotelo	Ministry of Forests and Range		
Diane Medves	Island Timberlands		

Interior Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Michael Carlson (Chair)	Ministry of Forests and Range	Al McDonald	BC Timber Sales Ltd.
Dave Basaraba	Tembec Ltd.	Anna Monetta	Ministry of Forests and Range
Keith Cox	Ministry of Forests and Range	George Nicholson	Riverside Forest Products
Vince Day	Canadian Forest Products	Greg O'Neill	Ministry of Forests and Range
Hilary Graham	Pacific Regeneration Tech.	Doug Perdue	Dunkley Lumber
Dr. Chris Hawkins	University of Northern BC	David Reid	Ministry of Forests and Range
Barry Jaquish	Ministry of Forests and Range	Alistair Schroff	Burns Lk. Community Forest
Dave Kolotelo	Ministry of Forests and Range	Chris Walsh	Ministry of Forests and Range
Tim Lee	Vernon Seed Orchard Co.	Bob Johnson	Tolko Industries
Mike Madill	Ministry of Forests and Range		

Extension Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Chris Hawkins (Chair)	UNBC	Hilary Graham	Pacific Regeneration Tech.
Dr. Michael Carlson	Ministry of Forests and Range	Tia Heeley	Vernon Seed Orchard Co.
Charlie Cartwright	Ministry of Forests and Range	Roger Painter	Ministry of Forests and Range
Keith Cox	Ministry of Forests and Range	Jill Peterson	Ministry of Forests and Range
Tim Crowder	TimberWest	Doug Stables	Global Strategy Inc.
Diane Douglas	Ministry of Forests and Range	Kathie Swift	FORREX
Peter Forsythe	The Pas Lumber	Dave Trotter	Min. of Agric. And Lands
Lauchlan Glen	Glenviron Consulting	Jack Woods	Forest Genetics Council

Gene Conservation Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Sally Aitken	Univ. of BC	Alex Woods	Ministry of Forests and Range
Dr. Scott Green	University of N. BC	Jack Woods	Forest Genetics Council
Dr. Andreas Hamann	Univ. of Alberta	Dr. Alvin Yanchuk	Ministry of Forests and Range
Dave Kolotelo (Chair)	Ministry of Forests and Range		

Orchard Pest Management Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Robb Bennett (Chair)	Ministry of Forests and Range	Dave Kolotelo	Ministry of Forests and Range
Jim Corrigan	Ministry of Forests and Range	Dr. Staffan Lindgren	University of Northern BC
Tim Crowder	TimberWest Forest Ltd.	David Reid	Ministry of Forests and Range
Dan Gaudet	Vernon Seed Orchard	Dr. Ward Strong	Ministry of Forests and Range
Peter de Groot	Canadian Forest Service	Jack Woods	Forest Genetics Council